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ABSTRACT

Proceedings of a 1980 conference on economic development in the West and the contribution of higher education in dealing with economic development issues are presented. The West as a region is considered in relation to land and population, urban growth, energy impact, and the states' role. Higher education can help in the areas of manpower, research, and public service. Economic expansion is dependent on the supply of trained manpower, and high technology manufacturing and energy development are two industries that are pacing western economic growth but need increased manpower supply. To meet the challenges of balanced economic growth, people with specialized, multidisciplinary training in economic development will be needed to provide the leadership and management capabilities for both the public and private sectors. A special facet of the need for economic development professional manpower is the need to improve access into the field for the region's minorities. Colleges and universities can help the situation by better manpower planning and by closer cooperation between higher education and industry in planning. The scientific and technical research role of universities has particular relevance to international trade, agriculture, and water issues. Public service roles universities can provide are: information on trends, policy research, and technical assistance. Attention is directed to institutional barriers to providing public services, faculty incentives, funding issues, coordination and communication, organizational structures, and formal linkages. A summary of conference recommendations and a summary of responses of a needs assessment survey are included. (SW)

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Report of a Regional Conference

Higher Education and Economic Development In the West

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Higher Education
And
Economic Development
In the West

Report of a Regional Conference

March 19-21, 1980
Denver, Colorado

Sponsored by
Western Interstate Commission for Higher Education
Western Governors' Policy Office
Council of State Community Affairs Agencies

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FOREWORD

The Western Interstate Commission for Higher Education

For two days in March 1980, representatives from throughout the western region gathered to consider a crucial issue for the 1980s: how to manage more effectively the ramifications of the vast economic development that is occurring throughout the West. Although the specifics differ, there is commonality in this regard among the thirteen states represented at this conference. Policy makers in all of the western states must deal with the benefits and problems of economic growth in responsible ways in order to meet both local and national interests. This is true whether the issue centers on the fragile environments of Alaska and Hawaii, the arid regions of Arizona and New Mexico, the sweeping prairie lands of Wyoming and Montana, or the booming cities of California and Colorado.

There is growing awareness at all levels of government of the wealth of resources that colleges and universities can apply, in this period of limited resources, to assist in shaping informed, intelligent, and responsible policies dealing with these economic development issues. These same institutions are being called on to meet the challenge of training the skilled and intelligent human resources that must operate our sophisticated, technologically dynamic industry and lead our complex governments.

It is appropriate that the stimulus for this conference be an interstate organization, the Western Interstate Commission for Higher Education (WICHE), founded to help meet the education and manpower needs of the western region. At this conference WICHE brought together persons proposing economic development; those charged with formulating economic policy in the states; and those providing the education, research, and other information that form the underpinning of reasonable decisions. This mix of conference participants—governmental, academic, and business and industry—is an indication of how WICHE operates effectively in this regard. It serves the states as neutral convenor to address common problems and seek mutually satisfactory solutions.

This conference did not result solely through WICHE's efforts. Our cosponsors, the Western Governors' Policy Office (WESTPO) and the Council of State Community Affairs Agencies (COSCAA), actively participated in designing the conference. A task force of state officials, university faculty, and WICHE Commissioners familiar with economic development issues gave overall shape to this effort and stimulated attendance.

During the two days of the conference, participants discussed the enormous impact that economic development is having on the West and the problems that are being created

by that development. They identified barriers that now thwart the fully effective use of education to meet the economic needs of the region. Then, they turned their attention to more positive areas: How can barriers be overcome to stimulate the contribution of higher education to dealing with economic development issues? What is the role of the universities and colleges? How can they be mobilized to provide the most effective service?

To mobilize the potential of higher education effectively, the participants agreed, there must be a commitment to reward faculty performance in the field of public service. Colleges and universities need models of workable ways of doing this.

Policy makers grappling with complex economic development issues need ready access to the right people at the West's colleges and universities who can provide critical information. Faculty researching subjects with public policy implications need a way to make their work useful to policy makers. Pressing issues of regional scope need to be identified for focused research. A regional economic development clearinghouse or research institute were suggested as ways to meet these needs.

Our booming high-technology and energy industries will need more trained engineers and technicians than our colleges and universities are graduating. A cooperative planning effort involving both private industry and higher education from all the affected states needs to begin.

These are but a few of the directions this Western Regional Conference on Economic Development and Higher Education has revealed. We may identify the problems . . . consider the implications . . . recognize the roadblocks. We may do all of those things, but if we cannot continue to work together in the future, our deliberations will have taken us no further. In economic development—as has been true in higher education in the West—the common bonds of our states are stronger than individual state differences. Working together, all benefit.

Patricia Saiki
Hawaii State Senator
Chairman, Western Interstate Commission for Higher Education

The Western Governors' Policy Office

The West is a unique and varied region, sparsely populated, yet rich with nature's endowments. As we enter the 1980s, this region and its economy are facing dramatic developmental forces. Population growth rates are among the highest in the nation, and once-rural states must cope with urban growth problems. Our massive energy resources will be developed to an extent dwarfing the development we have already seen. The water needs of energy, industry, and our growing cities, together with an uncertain federal policy, pose unprecedented challenges to the future of agriculture, traditionally the economic backbone of vast areas of the West. International economic forces will play a larger role in the western economy than ever before. Our burgeoning industries will need specialized, trained manpower in numbers beyond those we have been accustomed to providing. The question is not *if* this development will occur, but rather where, how fast, under what conditions, and at what costs to the diversity of our economy and our lifestyle.

Much of the new development facing the West is being driven by forces—economic, financial, political—from outside the West. But these forces need not always be beyond our control and influence provided we organize and use our own resources and our institutions wisely.

Some of the most vital of these resources are the skills and intelligence of our people. Some of the most vital of these institutions are the colleges and universities that teach those skills and house much of our region's collective intelligence. But new strategies, new institutional arrangements, and better ways to work together and bridge the gap between academia and state government are needed if we are to realize the maximum potential from this great resource.

Mutual support—making the most of limited resources by sharing them—is one of our most valuable western traditions, one that has always complemented frontier individualism. The Western Governors' Policy Office was conceived in this tradition to strengthen the capacity of its member states to manage a broad range of policy issues and to provide a vehicle for collective political expression and influence. WICHE serves a similar role in the field of higher education. Our joint sponsorship of this Western Regional Conference on Economic Development and Higher Education underscores the importance of cooperative problem solving among states and among the academic, the governmental, and the private communities.

I hope that this conference is only the first step in a continuing effort to identify necessary new institutional arrangements. We need to work together to find those programs that will work, to develop an agenda for action. Through mutual support such as this conference represents, each of our states can do more toward using higher education in the solution of the complex and pressing issues posed by western economic development.

Scott Matheson
Governor of Utah
Chairman, Western Governors' Policy Office

The Council of State Community Affairs Agencies

State community affairs agencies occupy a central place in state governments' economic development policy making and implementation process. In addition to being responsible for economic development functions in most states, departments of community affairs are also mandated to assist local governments in strengthening their capabilities through more effective use of local, state, and federal resources, as well as encouraging better intergovernmental relations at all levels of government. Higher education has a key role to play in this process.

The role of state governments in economic development, particularly in the West, is undergoing a significant evolution. These changes reflect the increasing complexity of many of the economic development issues the states must deal with, as well as shifts in the overall governmental climate. Economic development is no longer narrowly promotional. It is true that job creation remains a central objective, but state economic development managers must now also consider other goals, such as broader community development needs, environmental issues, and managing and mitigating the impact of rapid growth from energy development. The jobs of local government officials have grown correspondingly more complex. At the same time, these added responsibilities must be met in an environment of fiscal constraint and limited governmental resources.

To meet these challenges it is imperative that we do more with what we have. Colleges and universities represent one such resource that state and local governments must learn to tap in new and more effective ways. As conditions change, there is a need for a continuing assessment of the adequacy of the economic development training—and retraining—state and local government personnel are receiving. As new economic development policy tools are developed—new financing packages, downtown redevelopment, energy-efficient tourism, impact mitigation strategies—alternatives need to be explored, models shared, and effectiveness evaluated.

These are needs that universities can be extremely helpful in meeting *if* the appropriate linkages between researchers and practitioners can be built. While we see a high level of interaction between departments of community affairs and universities in responding to local governments' needs for technical assistance in areas of governmental management, universities remain a largely untapped resource in the area of economic development.

Closer linkages will require effort from both sides. Universities need to make themselves better informed about opportunities to support state economic development efforts, be it through conducting nuts-and-bolts economic feasibility studies or evaluating major policy alternatives. Moreover, for this interaction to be effective, universities' efforts in economic development must be supportive of the policy targets and development strategies of elected officials and their agency managers.

COSCAA is encouraged by the commitment this conference represents to build cooperation and resource sharing in this field. A closer relationship between higher education, state and local government economic and community development agencies, and the private sector can be mutually beneficial to all three groups—and ultimately to the public that we all serve.

Paula Herzmark
Executive Director, Colorado Department of Local Affairs
President, Council of State Community Affairs Agencies

PART I

SUMMARY OF

CONFERENCE RECOMMENDATIONS

Summary of Conference Recommendations

I. **Manpower**

1. **Internal Reallocation.** Universities and governing bodies should reallocate instructional resources to serve high demand fields, such as engineering, which are critical to the region's economic development. (See page 22.)
2. **Private Sector Planning Role.** Regional or state industry-higher education planning councils should be convened to coordinate information on critical manpower needs, higher education program planning, curriculum development, and student placement with state government and industry planning, and facilitate other potential private sector roles, particularly in high demand fields such as microelectronics and energy occupations. (See pages 22, 59.)
3. **Regional Consortia.** Regional cooperative mechanisms should be established among higher education institutions particularly affected by high growth industries, such as a consortium of community colleges serving energy development areas, for planning and information sharing. (See pages 19-20.)
4. **Economic Development Career Education.** Educational needs of economic development professionals in the West should be examined cooperatively by higher education and economic development agencies to ensure that primary curricula and continuing education remain appropriate to the changing field. (See pages 20-21, 59.)
5. **Internships.** Higher education institutions and economic development agencies should expand their use of internships as an integral part of curricula leading to positions in the economic development field. (See page 21.)
6. **Minority Access.** Higher education and minority economic development organizations in the West should work together to improve the accessibility and relevance of education to such organizations' needs, and to increase the representation of minorities in the economic development profession. (See page 21.)

II. **Research**

7. **International Trade Research and Development.** A high priority should be placed on applied research, development, and technology diffusion to make western industry more competitive in international trade. (See pages 23-24.)
8. **Interdisciplinary Research.** Research on technical problems of concern to western economic development, including agriculture and water issues, should emphasize multidisciplinary approaches and greater cooperation with the private sector. (See pages 25-26.)
9. **Technical Assistance.** Geographical areas and subjects in which additional technical assistance to business and state and local governments is needed should be identified, and ways of meeting these needs developed. (See pages 24, 27, 59.)

III. **Faculty Incentives**

10. **Recognition.** A program should be implemented to grant outside recognition for outstanding faculty performance in providing public service related to economic development in the West. (See pages 29-30.)
11. **Public Service Criteria.** Information on criteria for evaluating public service performance by faculty which have been tested successfully at selected institutions around the country should be gathered and disseminated to higher education institutions and governing bodies. (See pages 30, 59.)

IV. **Funding Issues**

12. **Legislative Funding.** Legislatures should be encouraged to recognize the value of academic public service to state economic development needs by providing explicit funding for such activities. (See page 31.)
13. **Outside Funding.** Outside funding should be used strategically to build a permanent core of public service management and staff capabilities at selected colleges and universities, which will enable them to respond to specific projects and contracts more effectively. (See page 31.)
14. **Indirect Cost Recovery.** Universities, legislatures, and state agencies should determine an appropriate basis for determining an indirect cost recovery rate for university public service on behalf of state government. (See page 31.)

V. **Coordination and Communication**

15. **Public Service Policy Statement.** State governments should adopt as legislative and executive declarations of policy a statement in support of the idea that "a major function of the state's universities is to assist the economic development of the state through a variety of public service activities." (See page 41.)
16. **Public Service Visibility.** Universities should take steps to achieve greater visibility for their public service activities and capabilities. (See page 41.)
17. **Entrepreneurial Coordinators.** Universities should assign someone with "entrepreneurial" talents to take the initiative in developing contacts with government agencies and private organizations active in economic development and to organize and manage public service research. (See pages 35-36.)
18. **Linkage Studies.** Alternative models and case studies of experience with various institutional arrangements to link higher education and economic development agencies, including clearinghouses, research directories, and policy boards representing user agencies should be investigated and the information disseminated. (See pages 38, 40-41, 59.)

19. **Regional Research Institute.** The feasibility of establishing a regional research institute to identify regional economic development issues and mobilize regional resources to deal with them should be investigated. (See pages 38-40.)
20. **Status Reports.** WICHE should make a continuing appraisal of the status of academic public service to economic development in the region and report periodically on progress in the field to interested groups. (See page 41.)

PART II

THE WEST AS A REGION

THE WEST AS A REGION

> [When we talk about the West] we talk about growth, old and new populations, mined and husbanded resources, pressures on towns and backcountry, the transformation of little cities into bigger ones, cowtowns into boom towns, grasslands into pits and spoil piles, mountain valleys into suburbs, condominium slums, and tourist traps. We speak of local loggers and Forest Service officials in conflict or in cahoots, of wilderness preserved and wilderness lost, of Indians and Indian lands, of federal agencies and state politics, of water, strip mines, and power plants, of the slow accretion of environmental law, the difficult spiral of social change.*

The character of the West—its commonalities as well as its diversity—shapes its economic development potential, its economic development problems, and the role that higher education can play in helping the western states to realize that potential and overcome those problems.

The West, Colorado Governor Richard D. Lamm told the conference, "is entering a whole new era, and that new era is going to be unlike the past era." The setting for the conference was shaped by such policy issues as urban growth management, energy development and community impact assistance, scarce water resources, transportation and tourism in an era of high cost fuel, meeting critical manpower needs, adapting to the challenges of international trade, assisting lagging areas that coexist with boom towns, and, above all, striving for a balance between growth and the quality of life.

Land and Population

In its geography, the West is an area of vast distances. The area of the thirteen western states—1,783,960 square miles—is approximately one-half of the total area of the United States. Yet, less than one-fifth of the nation's population lives in the region.

The low density of much of the West's population is startling in comparison to the rest of the nation. Wyoming has just 3.4 people per square mile; Montana, 4.8; New Mexico, 8.4; Oregon, 21.7. Only Washington with 51.2, Hawaii with 119.6, and California with 127.6 approach or exceed the average for the rest of the nation, 91.8. Despite this low

*Wallace Stegner, "Rocky Mountain Country," *The Atlantic Monthly*, vol. 241 (April 1978), pp. 45-46.

density, four out of five people in the West live in metropolitan areas. Excluding California, the metropolitan population of the remaining twelve states averages 63 percent of the total population, not far below the national average of 73 percent. Of the thirteen states, only Alaska, Idaho, Montana, New Mexico, and Wyoming have less than half of their populations living in metropolitan areas.

The West's population is also characterized by growth, 16.5 percent regionwide between 1970 and 1980 compared with 9.1 percent nationally. Of the ten fastest growing states during the 1970s only Florida is outside the West. With only 18 percent of the nation's population, the western states accounted for 31 percent of the total change in the national population.

This growth—reflecting the national shift in population from the North and East to the South and West—is sparked partially by changing preferences for quality of life and environment and increasing retirement populations. In part, it is driven by growth in the region's basic economic sectors: natural resource development, especially energy resources; a dynamic manufacturing sector, reflecting the location in the West of rapidly growing new industries; and recreation and tourism. The region's growing population, in turn, is driving expansion in other economic sectors, such as trade, services, residential and commercial construction, state and local government, and finance.

Minority populations are also growing rapidly in the West. The Hispanic population is more than 12 percent of the West's population; Blacks comprise slightly more than 5 percent. Some 72 percent of the West's Hispanic population and 83 percent of the Blacks live in California, which has 56 percent of the region's total population; Arizona, Colorado, and New Mexico have an additional 22 percent of the Hispanic population.

Urban Growth

The rapid growth of the West's metropolitan population has brought a set of complex and interrelated problems that are shared by many areas in the western states: in Denver and its sprawling Front Range; in Salt Lake City and the Wasatch Front; in Albuquerque and Honolulu; in Tucson and Phoenix; in Reno and Las Vegas; in Portland and the Willamette Valley; in Seattle and the Central Puget Sound region; and in the greater Los Angeles, San Francisco, and San Diego areas.

State, local, and regional governments are grappling with difficult trade-offs among conflicting goals and issues in urban growth management. Minimizing urban sprawl and the costs associated with it, while maintaining mobility, jobs, and the tax base, requires difficult choices, which must be made within a fragmented political arena.

> When the Front Range project was started in Colorado and the idea of a state development strategy was being discussed, they found that most important issues in controlling urban sprawl are really decisions that are made by the private sector. To the extent that government is involved, it is local government—not the state government, not the federal government. (Burgess)

To choose among policy alternatives, decision makers and private developers alike need answers to questions such as:

- What is the actual extent of agricultural and open space land losses to urbanization?
- What does "sprawl" cost the public in specific situations, as compared to realistic alternative settlement patterns?
- What will be the effect of proposed new employment centers, shopping centers, or major residential developments on housing, transportation, air quality, energy and water consumption, and government services and taxes?

- What will be the likely effect of alternative mixes of local policies, such as zoning, building limitations, land purchases, urban renewal, water and sewer service restrictions, or others?
- What will the metropolitan area look like, in its various dimensions, twenty or thirty years in the future under alternative scenarios?
(Urban Growth Workshop)

Energy Impact

Parts of the non-metropolitan West are faced with growth management problems of a different nature. Mining spurred the settlement of the region more than 100 years ago, and the extraction of energy minerals is spawning modern boom towns today.

The West, Governor Lamm pointed out, if considered not as a region but as a nation, ranks first in the world in its uranium resources and seventh in coal. Estimates of the magnitude of its oil and gas reserves in areas such as Alaska's North Slope or the Overthrust Belt of the northern Rocky Mountains are being revised upwards as exploration proceeds. All of the nation's high-grade oil shale is concentrated in Colorado, Utah, and Wyoming. The potential of geothermal and solar energy development is great. In this comparison, the West also ranks among the top nations in its production of non-energy minerals such as copper, molybdenum, silver, and gold.

"What is the impact?" is the key question western policy makers are asking in response to the renewed interest in the region's mineral wealth. Development of these resources generally involves large-scale operations, whether it is a molybdenum or coal mine, a uranium mill, a natural gas processing plant, an oil pipeline, a coal-fired power plant, an oil shale mine and retort, or a coal liquefaction complex. New populations—construction workers, permanent employees, service workers, and their families—may number in the thousands, while nearby communities may not be much larger.

As with urban growth management, policy makers and private developers dealing with energy impact management need information and analysis to make informed decisions.

> Pressures on the West require some long-range thinking we have not done before. This includes capital budgeting, looking not only at state projects but also at major private and federal actions. It also means looking at the effects of major capital investments on labor force, prices, capital availability, and other factors, not only at the site of the project but elsewhere in the region. (Briggs)

- How can local governments in these rural areas expand their basic public infrastructure to accommodate this rapidly expanding population and its need for more "water-sewers-roads-schools-hospitals-airports," as one conference participant defined economic development?
- How can demands for human services be met most effectively, as traditional, informal, small-town support systems are overwhelmed by problems of alcohol and drug abuse, mental health, primary health care, criminal justice, youth, and recreation service needs?
- How can local taxes be shared, when a project and its property-tax base may be located in one jurisdiction, while the population and service impacts occur across the county or school district boundary?
- How much major public investment should be made when the private development and its projected population may not materialize?
- What are the capital needs of main-street merchants if they are to expand their stores and inventories to compete successfully with new, large chain stores?

- What will be the regional impacts on labor, capital, even cement availability, as energy projects, service sectors, and non-energy projects such as the proposed MX missile system all compete in the same markets?
- Can a temporary revenue surplus from exhaustible natural resource extraction serve as a "development fund" to enhance the long-run economic vitality of a community?
- Can the local economy maintain a measure of diversity so that jobs and tax bases have some resiliency if energy projects encounter delays, downturns, or cancellation? (Capital Impact Workshop)

The States' Role

If the goal of state economic development policy is, as one state agency head at the conference said,

> the growth and improved productivity of the overall economy in a manner which promotes stability and diversity of the state and regional economy, and which is consistent with desired levels of environmental protection and quality (Caldwell),

then the states' jobs are becoming increasingly complex. They must continue to promote the creation of new jobs in order to meet the needs of young people entering the labor force and competing with the flood of migrants into the region. They must continue to bring into the mainstream those areas and groups that have not shared in the benefits of growth. At the same time, they must attempt to mitigate the impacts of too-rapid growth in other places. They must do this with limited tools and in a political climate of fiscal restraint.

> Western states, except for their general tax climate, have not occupied strategic positions or brought forth programs that can bring about the type of economic development desired in the region. We are accepting short-term economic activity without the community facilities and services to support it. (Caldwell)

Investment and location decisions—whether for an energy project, a manufacturing plant, or a housing development—are primarily made by the private sector. Local governments, more than the states, have the policy tools to regulate specific location and development decisions. The federal government, through its land ownership, regulatory, tax, and financial incentive policies, influences when, where, and whether many kinds of development will proceed in the West.

Despite these limitations to their jurisdiction, state governments are on the front lines in dealing with the problems of economic growth and development.

> As more mineral extraction takes place, as more electricity generation takes place, as more recreation investment takes place, as more population comes into the area, as more manufacturing comes into the area, there is going to be an increasing role for state governments everywhere in guiding economic development, in channeling it to different places, in seeing that it takes place without defiling the environment to too great an extent, to see that it takes place in an equitable way. If state governments don't want to do it, the citizens are going to demand it, and if the citizens don't demand it, the federal government is going to be on your back saying you've got to do it. (Pendleton)

The states occupy a critical position between local governments and the private sector, on the one hand, and the federal government on the other. They can provide a broad policy framework for statewide issues, serve as a facilitator for cooperation and coordination among local governments and the private sector, as well as offering technical and financial assistance. The states and multistate organizations can also influence the development and implementation of federal policy in the region.

"There are Gargantuan challenges that face us all," Governor Lamm told the conference, "in business, in politics, in the university." If the West is to meet these challenges in the 1980s, all the actors in the region's economic development will have to work together. It will require cooperation not only between different levels of government and among the states in the West, but also a sharing of resources between policy makers and managers at all levels of government and in the private sector, with the researchers and teachers in the region's colleges and universities.

PART III

HOW CAN HIGHER EDUCATION HELP?

Introduction

Higher education's activities are traditionally divided into three broad functional areas: instruction, research, and public service. Instruction and research are reasonably well-defined functions; public service is less so. While the conference did not dwell on definitions, "public service" was generally understood to include the official provision of university or college personnel (or materials or equipment that they could access) for research, consultation, or similar activities that are recognized as a benefit, in the short run, by outside public, governmental, or private groups.

All three functions were identified by conference participants as important to meeting the West's economic development needs. Instruction is vital to provide the trained manpower needed by the region's growing industries and by public and private agencies concerned with managing economic development activities in the region, as well as to provide an educated citizenry and leadership. Research, in the traditional academic sense, is necessary to provide the wellspring of innovation and economic vitality for the long-range competitiveness of the West's industry. Public service is needed to provide policy makers and public and private managers with the information and analysis they need for intelligent decision making.

Manpower

The 1980s promise to be a period of expansion for the economies of the western states. This economic expansion, however, hinges critically on our supply of trained manpower. High-technology manufacturing and energy development are two industries that are pacing western economic growth but need increased manpower supply. In addition, to meet the challenges of balanced economic growth, people with specialized, multidisciplinary training in economic development will be needed to provide the leadership and management capabilities for both the public and private sectors.

High-Technology Manufacturing

The West has become a center of high-technology research, development, and manufacturing. This is true not only in California's concentration of semiconductor and electronics companies known as "Silicon Valley," but also in midsized cities throughout the region.

> The West is rapidly enlarging its position as one of the most viable manufacturing areas in the world, a technological center of production, communication, aerospace, semiconductors, and other very sophisticated sectors which are solid growth, basic industries for the future. (Landry)

Traditional industrial location factors are not important for this complex of industries. The raw materials for the products are trivial; their markets are worldwide. Above all, these products embody applied *knowledge*—the human capital of trained, creative scientists, engineers, and technicians. Because of this, the availability and ability to attract key people is a number one criterion in location decisions in this industry. The "intangibles" of an attractive environment and lifestyle have become very real factors in the industrial blossoming of western cities such as Colorado Springs, Phoenix, Portland, Boise, Salt Lake City, and Albuquerque. Higher education is one of these locational factors.

> [Hewlett Packard] looks on the educational community as being a source of supply for us, but we also look for it to be more. On a continuing basis, it provides upgrading of skills, state-of-the-art programs, research, and technology. Nearness of colleges and universities to us over the years is pretty important because of the nature of our business and the importance of attracting people we want. (Flaherty)

The rapid growth of high-technology industries and the rapid pace of technological change have created a critical shortage of engineers and technical support personnel. This shortage is national in scope; it also threatens to impede the development of some of the West's key industries.

> The consequences of this shortage will be increased competition among industrial companies for the supply of engineers and technicians. As the large companies get more competitive and increase the share of available graduates they recruit, some smaller companies in your states and others may have trouble. They cannot be sure of their own supply and may drop out of the market. Another consequence of this increased competition for the engineering and scientific pool will be increasing costs. We will have to pay more for them, pay more to support keeping them, and that will eventually affect the cost of products. (Flaherty)

Energy Manpower

The national drive to increase domestic production of energy also requires skilled manpower in numbers far exceeding recent supply trends in the rural areas of the West with concentrations of energy resources. This manpower will need to be educated in both two-year and four-year higher education institutions.

State policy makers have identified this as a critical issue. Colorado's Jobs for Energy Task Force, for instance, was given the following charge:

> The Colorado education and training system should ensure adequate and timely training for Colorado's energy development. It should also guarantee that Colorado citizens enjoy the primary opportunity to participate in the mainstream of this energy development activity. (Forney)

Energy manpower needs spill across state lines. Participants in the workshop on manpower conducted at the conference suggested that cooperative efforts are critical. A Rocky Mountain community college consortium, a regional industrial advisory council, or similar mechanisms were suggested to coordinate higher education program planning, curriculum development, and student placement with state government and industry planning processes.

Economic Development Professionals

The increasing complexity of western economic development is creating a need for individuals trained in multidisciplinary skills who can address the policy and management problems of balanced economic growth in the West.

> One of the great needs of state government is the ability to get people out of the universities that are trained to do the things that the state government people need for them to do. (Kayne)

Individuals are needed in such positions on the staffs of state and local government agencies, state and regional offices of federal agencies, multistate organizations, and for such positions as executives of chambers of commerce and local development organizations, community development specialists, private consultants, environmental scientists, and private project development planners.

> In a democracy such as ours, both decision makers and society at large must be made aware of all aspects of change—its rates, causes, magnitudes, complexities, and, most important, its consequences. Hopefully, this region's educators will contribute to the development of the many skill requirements of the changing economic development process as they have contributed to other national priority needs in the past. (Hall)

To meet this need for management capability in economic development, there needs to be a coordinated approach involving higher education and the organizations that employ individuals with these capacities.

> One of the needs which is not communicated well is the need for managers in state government. The appropriate university departments—public affairs or economics or whatever—need to communicate with state government people about curriculum. (Communication Workshop participant)

Practical field experience should be a key ingredient in education for the economic development field.

> In order to have a broad and realistic perspective which can be used for responsible leadership roles in economic development, students need to do internships and be involved in other direct service programs. Higher education institutions need to build such programs into their curricula. The internships can be designed to address real needs and problems. It has spinoff benefits in that faculty gain a more realistic understanding of the economic development needs in the area. (Manpower Workshop participant)

The framework for economic development professional training exists in schools of economics, business, public affairs, or geography, among others. Conference participants urged closer cooperation with practitioners to assure effective programs.

> As in all new disciplines, economic development is in need of a well-designed curriculum tailored to the needs of the profession it serves. Although state and local development agencies, no doubt, have influenced and supported university training that reflects their professional needs, the multidisciplinary nature of economic development requires a coordinated regional approach. (Hall)

Minority Access

A special facet of this need for economic development professional manpower is the need to improve access into the field for the region's minorities. In many parts of the region, there are active community-based economic development organizations, such as community development corporations, working to create jobs and small businesses in minority communities. As these organizations begin to achieve success, one of the questions they face is how to upgrade the skills of their managers and professional and technical people, both those who staff the community development organization and those who manage or work for minority business enterprises. A related question is how to provide people who have experiential skills with the complementary formal education and credentials necessary to enhance their personal career mobility. Higher education institutions need to respond with outreach efforts and curriculum to increase minority participation in the economic development field.

> Is there some way our university could get involved in community economic development . . . specifically manpower training and employment? I am posing to the academic community that it has a problem here. The problem is really an intellectual challenge. How can this curriculum be turned around so that it involves more people? Economic development, especially in community economic development, is a vehicle to do that. (Escarcega)

Institutional Planning

Conference participants called on western higher education institutions to meet these various manpower needs.

Universities have not only an opportunity but a responsibility to concentrate resources in specific areas that will be major determinants of the state's future. (Landry)

At the same time, higher education institutions face major constraints of their own.

Engineering enrollments are growing 15 to 20 percent and are at all-time highs. Faculty is not growing. Salaries are abominable compared with industry. Local universities cannot supply the local demand. In Phoenix, the demand is for 1,500 to 2,000 engineers per year. Three universities graduate 500 to 700. (Haden)

Both sides agree that reprogramming of internal resources is necessary.

Universities must become responsive to economic needs. As needs change, such as the current demand for technical people, universities must reorient. A ten-year time frame for change is not acceptable. At the same time, universities must try to supply specific, nontraditional needs in areas such as continuing education. (Manpower Workshop participant)

We need to develop a model of the barriers to reallocation of resources within higher education to satisfy new and developing needs. (Forney)

Conference participants called for better manpower planning and, in particular, for closer cooperation between higher education and industry in planning. Because of the multistate scope of the problem, they called for regionally coordinated planning.

Industry is fragmented in its approach to manpower planning. Existing trade associations are generally too narrow in their interests. There is no system for sharing industry perceptions of manpower and training needs with education. (Flaherty)

In energy occupations, higher education does not have adequate data for planning, and industry does not participate and provide input in the higher education planning process. (Forney)

Private Sector Role

A major theme expressed was the need to look at new roles for the private sector to assume, to cooperate with postsecondary institutions:

- Assisting more in keeping curriculum current with rapidly changing state-of-the-art technology.
- Exchanging personnel—providing more industry staff as part-time instructors to help universities cope with staff shortages in high-demand fields, and having faculty spend time in work environments in industry to keep abreast of new advances and practices.
- Providing inplant adult education and retraining, which will be increasingly important as demographic trends reduce the proportion of new graduates in the work force.
- Providing more equipment and related resources to universities for state-of-the-art, hands-on training in the face of tighter university equipment budgets.

Industry cannot confer degrees or grow engineers, but we can do much to produce our technical support group; I suspect we will probably do that, and it would be helpful to be able to do that together with higher education. (Flaherty)

Research

University research and development has long been a key source of scientific and technical innovation for the American economy. The scientific and technical research role had particular relevance to the conference's discussions of international trade, agriculture, and water issues.

International Trade

The international economy is of growing importance to economic development policy makers in the western states.

> It is hard to talk about regional economic development policy these days without considering the larger economy. The interdependence of our economy and the world's makes it very, very difficult for us to develop policies unilaterally. (Hall)

The United States' place in the world economy has changed in recent years:

- The United States' share of the market value of world production declined from 32 percent in 1960 to 24 percent in 1970. Japan's share increased threefold; West Germany's increased by 50 percent.
- The United States' share of world exports declined from 15 percent in 1960 to 11 percent in 1970. Japan's increased from 3 percent to 7 percent; West Germany's increased from 9 percent to 11 percent.
- The United States' balance of payments went from a $3 billion surplus in 1960 to a $30 billion deficit in 1978. Japan's went from a $0.4 billion surplus to a $19 billion surplus; West Germany's increased from a $4 billion surplus to a $21 billion surplus.
- Only 15 percent of American businesses are involved in exporting. The United States Department of Commerce estimates that 20,000 firms, mainly small businesses, could sell products outside the United States.

(Wong, Chambless)

The discussion of these issues pointed to product innovation and better informed, more aggressive promotion and marketing as key factors in improving the competitiveness of the United States in the international economy. Conference participants agreed that Utah Governor Scott Matheson's call for "a partnership of business, higher education, and state government" in the western states could make a contribution.

The western states have special opportunities, as well as challenges, in the international economy.

> The West has a comparative advantage due to its proximity to Mexico and the ever-growing and extremely powerful Pacific Basin economic region. (Landry)

Furthermore, the region's raw materials are in high demand overseas.

State governments and regional organizations are increasingly seeking ways to promote and facilitate international trade. This applies to the intermountain states as well as those on the Pacific Coast. States are promoting direct sales of agricultural commodities. The Western Governors' Policy Office is exploring the feasibility of establishing a multistate trading company to export coal to Japan and Taiwan. The Four Corners and Old West Regional Commissions, as well as individual state economic development agencies, are establishing international trade promotion offices and projects. Higher education can support these promotional and marketing efforts by providing technical assistance, such as overseas market identification, as well as analysis of policy alternatives.

New technology was believed by participants to be the other key to the international trade problem. They said that university research and development are central to improving the competitiveness of western business and industry.

> Research and development, as a percentage of GNP, have declined by 22 percent in the last five years in the United States. In contrast, they have increased 62 percent in West Germany and 35 percent in Japan. (Wong)

Participants of a workshop on international trade believed that research and development are needed to develop technologically new products, improve quality control, and improve productivity and the cost competitiveness of American products.

Research and development to achieve these objectives are needed in many different sectors of industry. The conference identified more general recommendations:

- Reset priorities (and provide funding for) research and development programs to meet these international trade objectives.
- Develop effective means to diffuse new technology, especially to small businesses. University technical assistance to business—especially small businesses—has great potential as a way to do this.

Agriculture and Water

Agriculture has been the traditional economic base of much of the western region. Although its position in the region's economy and politics is changing, it remains important beyond what the dollar value of farm and ranch income would indicate.

> Agriculture is no longer the dominant force in the Southwest that it once was. It must join the rest of the major interest groups as a competing, rather than a dominant force. (Landry)

The supply, processing, distribution, and financing of the region's agriculture industry supports economic sectors that appear remote from agriculture at first sight.

> The importance of agriculture goes beyond the economic value of its production. It is crucial to the social fabric of the rural and smalltown West and the diversity of the whole regional economy. (Rubingh)

In a region that is climatically arid or semiarid, with few exceptions such as the Pacific Northwest, agriculture is inextricably linked with water. Even in relatively urbanized states such as Arizona or Colorado, agricultural irrigation accounts for 80 to 90 percent or more of the use of available water. But competition for limited water resources is intensifying. Municipal and industrial uses are growing as the West's population expands. Instream water needs for recreation and wildlife are increasingly being recognized. Potentially massive energy development projects loom on the horizon, requiring water not only for production but also for land reclamation in inhospitable locales. At the same time, the western states are attempting to deal with the implications of far-reaching shifts in federal water resources policy: a new emphasis and definition of "conservation"; new criteria for water storage project development; new decision making procedures; unresolved claims for reserved federal water rights; and the effects of water quality control measures on the quantity of water available.

> More research needs to be done to determine the short- and long-term impacts on agricultural production, and subsequently the economic stability of the West and the nation, of converting agricultural land and water to more intensive economic uses. (Willardson)

Higher education's research role has been established in agriculture and water through the land grant universities, the Agricultural Experiment Stations, the Cooperative Extension Service, and the Water Resources Research Centers. State water policy officials belong to the Western States Water Council to deal with regionwide policy issues on a coordinated basis.

Although agriculture and water are, in some respects, a model for coordinated action between higher education and economic development, discussions during the conference highlighted some issues that need to be given more attention:

- The multidisciplinary nature of current economic development problems. A classic example is the complex interrelationships between agricultural irrigation, energy development water requirements, the cost and availability of energy for such agricultural uses as pumping groundwater, recreation and wildlife needs for minimum stream flows, and municipal and industrial growth in the West. Some conference participants believed that the traditional higher education mechanisms, such as the Cooperative Extension Service, were not as effective in providing needed assistance on these issues as they were in dealing with single-dimension agricultural practices.

  > The High Plains Study is a good example of a concerted effort by state agencies and universities to comprehensively study a potential economic development constraint which affects a large geographic area. This $6 million EDA-funded study, perhaps the largest such project in the nation's history, will assess the economic and political impacts of underground water depletion in a region encompassing large areas of Colorado, New Mexico, Kansas, Oklahoma, Texas, and Nebraska. (Hall)

- The growing importance of the private sector. Closer ties with private industry were urged as a means of providing the appropriate focus to applied research, such as new product development; facilitating the transfer and diffusion of new technology; and providing an alternative source of research funding.

Higher education and the Cooperative Extension Service no longer lead the field in research and technology transfer in agriculture and water resources. The Extension Service is underfunded. It lacks specific accountability, which makes it difficult to redirect such a large system. What is needed is a multidisciplinary approach, a cooperative effort between industry and higher education. (Agriculture and Water Workshop participant)

[The University of Arizona Office of Arid Lands Studies] has a number of private sector contracts that illustrate nontraditional, multidisciplinary research focuses, such as the production of saltwater shrimp in aquaculture; research on the commercialization of new, low-water-use crops for financial institutions with heavy involvement in agricultural lending; and comprehensive environmental and water conservation design and monitoring services for manufacturing companies. (Foster)

Public Service

Needs for Public Service

Public service has long been accepted as an appropriate function for higher education to fulfill. The multiplicity of complex issues in western economic development and increasing pressures from state legislatures and executive agencies for state universities to demonstrate their relevance in solving state problems make the need for public service all the more intense. Yet, despite longstanding public service programs and more recent special-purpose programs, conference participants said there is a critical need for improvement in the application of university resources to western economic development problems.

> Hardly any legislator is as knowledgeable as he or she needs to be, particularly on questions such as energy, nuclear waste, and transportation alternatives. (Goltz)
>
> Economic development decisions in western states are being made in an informational void. (Resume)
>
> The enormous resources which exist within universities and even in private research shops are somehow not utilized in state government. The access is difficult; experiences are frustrating. (Monaghan)
>
> Neither the university nor the state has their act together in regard to public service functions. (Chamberlain)

To deal with questions like those posed by urban growth or energy impact problems, decision makers need, first of all, *information*—reliable data on the current situation and trends. They also need *policy research*—analysis of complex interrelationships, projections of alternative futures, answers to sophisticated research questions. This is analysis that government agencies, subject to the pressures of crisis management, generally cannot undertake themselves.

A third type of public service needed in western economic development is *technical assistance*—consultation, often on a one-to-one basis, to help government staff, business managers, or others solve specific problems encountered in their work and to build their capacity for managing future situations.

The Economic Development Administration's University Center Program has been extremely successful in creating and retaining jobs and stimulating small business investment. The centers provide a comprehensive range of management, marketing, and engineering services to private businesses, communities, and development organizations. One-to-one counseling has proven the most effective delivery technique. The centers typically have a small core staff of nonteaching generalists, often with prior business experience. They are supported by faculty functioning as specialized consultants. The total historical cost of saving and creating a new job amounted to $258 a job, including all federal and local contributions. (McFarland)

Institutional Barriers

If the need for public service is so great, why is not more being done? The conference identified a number of "institutional barriers" that, to a greater or lesser degree, inhibit the effectiveness of public service. The conferees agreed that faculty incentives, funding, problems in communication and coordination, and organizational structure are obstacles to more effective cooperation and involvement of universities in economic development. They are not, however, impossible to overcome.

Gene Bramlett, vice president for Public Service and Extension at Auburn University, is a nationally-recognized expert on this subject. His conference keynote address summarized these issues, placing them in the context of the nature of the university as an institution:

> Most of the writings and speeches about institutional barriers are somewhat negative. They are either critical of universities for allowing barriers to exist or defensive about not being more service oriented. Thus, before considering specific barriers, it would be beneficial to identify some of the unique features of universities everywhere which affect the use of university resources in economic development.
>
> One of the features one needs to understand about universities is that they are an integral part of higher education nationally and take their cues from the education industry. The connectional link of comprehensive public universities is not as much with the state where they are located as with similar universities in other states. . . .
>
> The significance of all this is that universities tend to conform to the standards set by the educational industry of which they are a part. Their long-term concern is that they be judged by peer institutions to be outstanding in relation to other universities. Thus, when universities sometimes appear to be unresponsive to state needs, or otherwise operate in an irrational manner, it may be because they are stepping to a different drummer.
>
> The faculties of major comprehensive universities tend to think of themselves as a "community of scholars" with a special mission and purpose in society. While they are interested in their state's progress, they view their principal role in the state to be education.
>
> Contrary to popular opinion, universities today are not havens of leisure. Everyone is expected to be a good teacher and to demonstrate scholarship. One of the most highly honored expressions of scholarship is the refereed journal article based on original research. In contrast, technical reports based on applied research or descriptive or planning studies count much less as evidence of scholarship.
>
> Effective pursuit of scholarship tends to drive faculty to narrow areas of expertise. The narrower the subject, the more expert one can become in it. While specialization is not sought for its own sake, the need for national and international recognition forces one to it. Thus, universities contain collections of specialists, many of whom are little inclined to accept assignments outside their field of academic specialization.

> Both the universities and the agencies and individuals they serve are interested in better quality of life. Both have unique features and special problems with which to deal. We must try to understand one another better if we are going to work together effectively. And that is not an impossible dream. (Bramlett)

Faculty Incentives

The traditional rewards systems of most universities do not give as much credit for high quality public service activities as they do for good teaching and scholarly works. This problem was of central concern to the academic participants in the conference discussions.

Rewards for good performance in the academic world are expressed in the form of a series of "carrots and sticks:" hiring, probationary reappointments, tenure, promotions through several ranks, and salary increases. To a large extent, tenure and promotion policies are created and administered by representatives of the faculty. Such procedures are usually designed to ensure fair evaluation by qualified peers. On the other hand, they tend to perpetuate traditional standards of scholarship and reserve promotions and tenure for those engaged in teaching and academic research.

Most institutions have policies providing for temporary release time and extra compensation for outside activities. Release time, however, often cannot be arranged at the time a faculty member's services are needed by a government agency. The service work may not count effectively toward the faculty member's future progress, and most universities have compensation policies that do not permit faculty to work on outside projects more than a few days per month. In addition, while some faculty members respond favorably to such incentives, others do not. Yet the need, particularly in economic development, is to be able to draw on the expert knowledge of a broad range of faculty talent.

Conference participants suggested several alternative directions for improvement in this area:

1. *Recognition.* Some speakers called attention to the importance of intangible rewards—recognition of faculty members for their contributions in public service—as well as tangible financial and promotional rewards. Such recognition is needed from outside groups such as state agencies. It is also essential that faculty public service activities receive "enlightened input and support from the very highest sources" in the university administration. (Tuma)

> Dedicated people in higher education are working hard within their present resources to serve communities with economic development problems. But these people are getting little recognition. (Caldwell)

In addition, applied research and public service can have direct spinoff benefits in the classroom by providing current "real-world" case study applications, as well as by encouraging interdisciplinary contacts among faculty. This benefit of public service to a faculty member's instructional performance also needs to be recognized.

> [The Ford Foundation's University-State Environmental Management Program] has had important impacts on the university side. In several cases, faculty members in different departments began talking with each other for the first time. Students have liked it. Young faculty have liked it. In many cases, the really successful projects came from newer disciplines, like Urban Planning or the Management of Technology or Energy Institutes, and it is quite possible that this kind of interaction strengthened those disciplines. (Pendleton)

Finally, outside recognition of high-quality economic development public service performance can be an ingredient in the internal university evaluation process.

2. *Assigned and Budgeted Duties.* Public service activities can be rewarded within the traditional academic tenure, promotion, and salary structure by broadening the criteria for evaluating performance. This requires rigorous, although different, criteria for quality performance and productivity in public service activities. These criteria would be explicitly related to faculty members' "assigned and budgeted duties," including public service. The University of Georgia was cited as an example of this approach.

3. *Separate Career Ladder.* Another alternative is to build a nonteaching professional staff of sufficient quality and breadth outside the academic structure. Separate titles and salary structures could be either roughly parallel to the mainstream faculty's or totally independent. This approach offers the advantage of being able to hire capable people for specific public service tasks without the terminal degree and other traditional credentials of teachers/researchers. It works best where public service programs have grown to substantial proportions or where all public service has been consolidated into a separate autonomous division.

It has the disadvantage of separating the faculty into two classes and does not promote the involvement of teaching/research faculty in public service activities. It risks leaving the public service unit without a solid research base and without the ability to draw on the range of faculty expertise needed.

Some public service units which are active in economic development have adopted a compromise model.

> The University of New Mexico's Institute for Applied Research Services consists of a core group of academically qualified professional staff for administrative and coordinative functions. They remain closely aligned with academic functions and draw much of the expertise needed for individual projects from the regular faculty. (Zink)

In order to implement a system of rewarding public service activity, either as an "assigned and budgeted duty" or under a separate career ladder, workable criteria for evaluating the quality of public service performance need to be developed. Participants believed that it would be valuable to gather information on relevant public service criteria from institutions around the country and disseminate this information to regional institutions trying to improve their system for rewarding faculty public service.

Funding Issues

Like faculty incentives, funding of public service activities in economic development is part of a much larger problem facing higher education in a period of tight fiscal resources. From the university's perspective, "The university community wants to help, and it has valuable skills; but just as there are no free lunches, there are no free research or public service programs." (Chamberlain)

State agency managers faced with budgetary constraints of their own may take the position that higher education acts as a consultant, and "in delivering a service, runs the meter, often with exorbitant overhead." (Caldwell)

University administrators have limited freedom to allocate substantial amounts of internal funds for public service activities unless the legislature provides funds specifically for that purpose. In addition, *continuity* in funding is critical if an effective public service organization is to be developed and sustained.

> Without some basic funding to support a permanent public service program, sporadic contracts and grants will not build and sustain an effective program. One should recognize an important principal underlying this statement: special talents, skills, orientation, procedures, and administrative machinery are essential to properly operate public service programs on a long-term basis. (Bramlett)

Conference participants discussed several different approaches to this problem:

1. *Internal Reprogramming.* Even in the midst of pressures to give public service a lower priority in the internal allocation of tight resources, universities should pay the price to do it right if they advertise that public service is one of their missions.

> If extension or public service is an explicit mission of the institution, then a president has an obligation to find some amount of money to support an *organized* program of public service. (Bramlett)

One direction that was suggested to make this internal commitment was to reprogram, either by administrative or legislative action, resources in low demand as a result of declining enrollments. Surplus FTEs could be set aside for public service activities, for example. Another suggestion was to retrain tenured faculty to provide public services; this would be of greater value to the state than would be realized by continued underutilization of tenured faculty in traditional activities.

These suggestions have the disadvantage that those faculty whose specialized expertise is most needed by economic development decision makers are not likely to be the individuals who are underutilized within the university. Many participants believed that this approach, though direct, begged the question of how to get legislatures to provide, or allow administrators discretion to allocate, funds for public service.

2. *Federal Funds.* Federal funding supports a number of public service efforts in economic development. The Economic Development Administration's Technical Assistance Centers Program is a prominent example, providing program funds for thirty participating institutions around the country. It was argued, however, that

> Federal funds provided to universities to support economic development programs have never been sufficient in permanence or scale to support a major program. Basic program funds (in contrast to project funds) are particularly needed. It is basic funding which permits secondary capabilities to develop. If a given federal agency such as EDA could make a major commitment to help support an economic development operation in one major university in each state, the flow of resources into development activities could be vastly increased within a few years. (Bramlett)

3. *State Agency Contracts.* An alternative to providing funds directly to colleges or universities to provide public service is to provide funds to the appropriate state agencies or public development groups to contract with local universities for services as needed. As one governor's staff member told the conference, "Even though we are ultimately one of the university's 'directors,' we cannot continue to ask for assistance without providing adequate funding." (Monaghan) Many state and local economic development agencies, however, also lack funding to contract for the full range of research and technical assistance they may need. In addition, even if the user has money, a university, in order to be responsive to outside requests for assistance, must have developed a basic, ongoing public service management and staff capability.

A related issue is the appropriate indirect cost reimbursement rate to be charged a state agency by a state-funded university. Current practice varies from state to state, and the conference had no consensus recommendation on this question. It recognized, however, that a mutually acceptable rate has to be agreed on.

4. *Private Sector Contracts.* A recurring theme in conference discussions was the growing importance of the private sector as an external funder of university research as state and federal funding gets tighter. This was true both of "technical" and scientific research and development, described in the previous section, and increasingly of socio-economic applied research as well. It is obvious that this source of support can be only a partial solution because it cannot meet the need for *public policy* research, which is by definition in the purview of governmental agencies.

The private sector is, of course, the key actor in making the investment decisions that drive the region's economic development. A new ingredient, however, is the greater responsibility which society and the regulatory system have placed on private developers of major projects for managing and mitigating the social impacts of their developments. A representative of a private company, which is in the early stages of a large mineral development project in the region, described an example of this. His company decided to hire its own team of consultants to assist the local community in planning to meet its anticipated human services, housing, and community design needs. This company went outside the area for its consultants, because "the state and federal governments were not producing, and the local college was not adequate to meet our needs." (Rock)

Representatives of the private sector and of university public service units which have dealt extensively with private sector users, both stressed that to meet private sector economic development needs successfully, universities need to be highly responsive in timeliness and quality of the product, responsive beyond what seemed to be "typical" university practice.

5. *Quasi-Public Research Foundation.* The formation of an independent organization, only loosely associated with particular higher education institutions, was suggested to meet a number of concerns regarding the effective provision of public service. For funding, it was suggested that an independent state or regional research foundation might be established with base funding from investment income from an "endowment" of state surplus funds and supplemented by income from grants, contracts, and indirect cost recovery funds from associated universities.

Gene Bramlett summed up the argument for more solid funding of academic public service for economic development:

> In one way or another, greater use of university resources in economic development will cost taxpayers additional money. But the total increase needed would be insignificant in relation to the progress that could be achieved, the savings that could result, or the billions of dollars of public and private funds invested annually in the region. (Bramlett)

Coordination and Communication

Another major barrier to the use of university resources in economic development is coordination and communication between the group with the need and the group with the resources.

> Economic development may not fully utilize the great potential of higher education because it does not know what higher education's brains are capable of doing . . . and higher education, on the other hand, thinking in more cloistered terms, is not reaching out. (McCall)

> Higher education and economic development practitioners are often talking past each other. We need better institutional linkages. (McFarland)

As Gene Bramlett posed the issue, "Universities and public organizations naturally operate in their own worlds, trying to fulfill their principal missions. Left alone, each gravitate to their own kind and may never discover their points of mutual interest. Consequently, it is imperative that one or the other make a conscious effort to open and maintain communication."

Operating "in their own worlds," it was pointed out, raises communication barriers that are rooted more deeply than differences caused simply by different institutional missions.

> You have those two cultures: the problem-solving, sciencing culture that the university is supposed to be, right in juxtaposition with the political system, with people who have self-selected into totally different ways of thinking and working and have almost no understanding of what the other group is about. When you bring those into maximum contact with each other, you have to have people who have great strength on both sides to manage the interchange, to translate and help people understand each other. (Mann)

Some workshop participants agreed that working relationships between universities and elected officials were often more difficult than between universities and government staff because the latter were more likely to share the "scientific culture" outlook.

Bridging this gap will require greater understanding of the roles and functions of both sides. On the side of government it requires an understanding of the capabilities and limitations of university researchers and consultants.

> In utilizing university consultation for controversial policy issues, the government manager must know how far to push and what the limits are. We had a bad experience when we brought in a faculty member for advice on a very narrow part of a water policy problem. When the decision was made, it was contrary to the faculty member's own position on the issue as a whole; yet his name and the university's were associated with the decision. (Monaghan)

Likewise, university people interested in providing public service, particularly in the policy arena, need a more sophisticated appreciation of the political process as well as understanding of the limits on their own role as outside experts.

> Few people from the university understand that the legislative process is an adversarial one. If I bring in a star witness from the university who says, "On the one hand . . . on the other hand," I am feeding my opposition. (Monaghan)

> We need to have some humility about the political process. Our recommendations will not always be accepted, especially the first time. (Burgess)

The University's Role in Public Service

One necessary step in establishing effective coordination between higher education and users is to define the appropriate roles for colleges and universities. Although the general consensus of the conference was that there is a need for more, and more effective, university public service to state economic development needs, it also sounded a note of caution about the limits of higher education's ability to serve state government:

- The fundamental instructional and basic research missions of higher education must not be lost in the search for more effective applied research and public service.

> If we are to maintain excellence in a thirty-year-plus perspective, then the role of a strong research university and strong liberal arts education needs to be maintained and funded appropriately. (Lyell)

- The line between providing support or information and actual involvement in decision making and implementation must be recognized and respected.

  The proper use of university resources in economic development is not decision making and implementation. That is the role of public officials and private enterprise. Rather, university resources should be used to identify problems and alternative solutions, to suggest new approaches, and to explain what would happen *if* . . . . (Bramlett)

- Universities can also serve as neutral bodies and as a forum for conflict resolution.

  It was an appropriate role, appropriate behavior, for a university team to come in and survey the state's energy policy making process, deal with a number of questions that were quite volatile, give us the answers, and then get out and not be players in the subsequent equation. (Monaghan)

- Universities are only one of a number of potential suppliers of applied research, technical assistance, and similar informational resources.

  We need to do a much more thorough analysis of the demand on the state capital side of this interaction, and then say, "Who can supply that kind of information?" There are lots of candidates out there, of which universities are just one big class. There are consulting firms galore that do it, internal state agencies that can do it, public interest groups of the governors and the legislators, and many of the agency heads who can do it. (Pendleton)

- State agency managers expressed concern about the accountability of university efforts in economic development, about their consistency with state policy guidelines and development strategies, about duplication of services, and about competition for funds.

  Are higher education institutions willing to deliver their resources through the state's development strategy? Is higher education willing to reprogram existing resources to assist states and local governments with economic problems and remove itself from the competitive position it has assumed in seeking economic development funds? Is higher education's agenda to take over incrementally state agencies' turf? (Caldwell)

- At the same time, directors of university-based economic development programs pointed out their need to maintain their separate identity in fulfilling their objectives.

  At times when a state economic development agency comes under fire from the legislature, an arms-length relationship helps protect a university-based unit from being tarred with the same brush. (Schmidt)

Universities' potential public service role is also defined by the general milieu of their relationship to society at large and to their legislatures in particular. Conditions vary from state to state within the region; however, conference discussions reflected a general mood of austerity, heightened accountability, and, in some cases, mutual hostility.

> Collectively, all major universities in the West are much better known nationally and internationally and contribute in many ways more in the national and international scene than they are encouraged to do in regional or state environments of which they are a part. (Chamberlain)

> The general milieu, in terms of cooperation on economic development, is negative. The environment is really not conducive to large-scale cooperative efforts. . . and things are getting worse. (Monaghan)

This setting requires that a discussion of university public service activities recognize distinctions in the magnitude of resources required by such activities. Jim Monaghan, Director of Intergovernmental Relations for the Colorado Governor's Office, outlined four general levels of activity:

> First, state government can ask for a major redirection of university direction and talent. That was done some years ago in the agricultural area with the establishment of land grant colleges. It was done more recently in water availability and water quality, where state government and the federal government said that there is much more that we need to know about water and we need your assistance. That major redirection and challenge to universities was accompanied by a good deal of funding.
>
> At a second level, short of major redirection, there are a number of coventuring possibilities. State government can do a lot to provide an avenue for distributing information—for legitimizing information—that university researchers are developing already without requiring a major redirection of university resources. For example, in Colorado, we are using several universities to help look at growth and development along our Front Range, and we are really not redirecting their work at all. One institute was accumulating data and information about growth and development and was using it in an academic and research setting but had no legitimate citizen avenue for expressing the bits of information it was beginning to form.
>
> Third, the state government ought to be more open to tap into the opportunities which exist for very short-term consultation. We can put together a team from a university in one evening, bring some of our state government managers in together with some of the best researchers in the country and have them answer several threshold questions on a particular critical policy issue. We did this, for example, with some very controversial requests for emergency weather modification. Again, it tapped into an existing system and did not impose in any way upon the research and investigative responsibilities of major research institutions.
>
> Finally, there are hundreds of managers throughout state government, usually at relatively low levels, who pick up the phone on a daily basis to call somebody at a university—"I have a problem; could you tell me who to talk with to solve the following?" (Monaghan)

Academic Entrepreneur

Solving communication problems requires action from both sides. Gene Bramlett, however, recommended to the conference that

> . . . universities take the initiative in solving the coordination/communication problem. They should become involved in affairs of the state or regions, learning not only the needs being discussed and the context in which those needs are expressed, but also the individuals who bear responsibility for various kinds of development. There needs to be a core group within the university whose staff are involved in discussion of development issues as they emerge. These staff or faculty can then better select the proper resources, be sensitive to time constraints, orient university resource persons to the problem, and maintain quality controls while the work in in progress. (Bramlett)

Regardless of organizational form, one key role was highlighted repeatedly: the need for an academic "entrepreneur." Conference participants said there needs to be someone at the university who will:

- develop the key contacts with government agency staff and the private sector;
- take expresaions of need and flesh them out into research projects;
- organize the appropriate university resources;
- assure completion of tasks so that the product meets the user's criteria, both in substance and timeliness.

> You need an entrepreneur in the university to make this thing work. . . . It takes a lot of time cultivating the people in the state capital whom you were working with, learning, really, about what they wanted, what they needed, what made them run. (Pendleton)

> The system needs a series of academically credentialed but primarily entrepreneurial individuals who would need a reward structure, perhaps more differentiated than the actual research conductors. The entrepreneurs will flesh out ideas that are generated from a policy board; organize the resources for the conduct of research; provide the stimulus to more introverted research types; and assure the completion of tasks relative to the criteria of the policy board. (Lyell)

Government agency staff, legislators, private industry representatives, and directors of successful university programs stressed repeatedly the vital importance of persons involved in university public service understanding and responding closely to their outside clients' needs. The problem must be defined in the user's terms; the product must be truly useful; promised results must be delivered on time. Many "user" representatives related frustrating experiences with academic researchers who fulfilled their own research/professional advancement priorities rather than those of their clients.

> Boom town communities have been studied to death, but the studies are not useful to local government managers. There are good descriptions, but no help in answering the question, "What do we do about it?" (Impact Workshop participant)

> Universities sometimes act as prima donnas disregarding state agencies' strategies for targeting and leveraging assistance. (Landry)

> We need to go beyond problem identification to developing alternative responses and analyzing the pros and cons of policy alternatives. Local priorities, not those of outside universities or federal funders, must be met. Academics have been politically insensitive to the problems of implementing the solutions. (Rock)

On the other hand, potential users of university services need to understand how the academic system functions and to formulate their needs for assistance in ways to which universities can respond.

> Governments do not approach universities with *specific* requests. (Urban Growth Workshop participant)

> There is no tradition of state and local funding for university research in this state. Money has come from the feds and private industry and, consequently, they have influenced the direction of research. State and local governments have not been asking the right questions to direct policy research. (Miller)

A related problem has to do with universities' credibility. One of higher education's great potential assets in providing research and assistance to decision makers is its removal from day-to-day pressures and politics, its objectivity.

> State development agencies often have a seige mentality and become concerned with making the case *for* development, rather than soliciting objective information. (Resume)

Yet, this very quality is questioned by many potential users.

> Academics tend to favor growth limitations. They lack first-hand knowledge of business and the economy. (Urban Growth Workshop participant)

> A weakness may be that higher education has not sold itself hard enough, that its credibility may be dampened by the image of ivory-towerism . . . that legislators, county commissioners, and businessmen may not regard its research as being as valid as similar research done by government or corporate staffs. (McCall)

Nevertheless, there are university public service units that have been able to overcome this distrust and provide objective research and analysis even in controversial issues.

> (The University of Alaska Institute for Social and Economic Research) tends to get called in by the state to be the 'nay-sayer,' to analyze the impacts of a proposed development and the larger social and economic forces affecting it. Despite the political pressures of prodevelopment interests, the Institute has maintained its credibility because it has usually been right. (Gorsuch)

Organizational Structures

Traditional organizational structures work well for the administration of teaching, research, and other internal academic functions. They do not work well, however, for organized public service programs. Public problems, particularly in economic development, tend to cut across the traditional disciplinary lines of universities.

> Because universities' resources are scattered throughout numerous departments, it is desirable that someone familiar with the university coordinate the negotiations and make the arrangements. It is generally agreed that special administrative structures are necessary for the efficient operation of programs designed to serve groups outside the institution. This is not an easy task, but universities have done it successfully in hundreds of instances. (Bramlett)

This is particularly true for what may be termed "policy," as opposed to "technical" or "programmatic," research and consultation. Informal interchange at the technical or programmatic level appears to occur relatively freely between, for instance, a state development agency economist and a university business research bureau member.

> Policy issues are more difficult. How do universities and other knowledge-intensive units in our society inform policy making at the level of the mayor, the governor, the city manager, and legislatures, which are the policy making bodies in our society? That is where the challenge lies. The major initiatives and the major barriers really have to be overcome in terms of dealing at the policy level where assistance many times is wanted and many times people want to give it, but the political and other problems exist to prevent it from happening. (Burgess)

> The role of the university in working with state government people on policy issues is the area in which the successes have been relatively small and the failures have been very large. Yet, it is the area of greatest need. (Pendleton)

Much public service activity goes on between university faculty and government agencies or private industry without being formally organized or recognized. In Colorado, for instance, the governor's office conducted a survey of the extent of specific, identifiable contacts between state agency personnel and higher education.

> To our amazement, we found approximately 200 well-identified, name-targeted contacts that were in existence and being used on a day-to-day basis. Every major college and university in Colorado and every major department and agency had full access back and forth. That did not match up with the general sense of separateness that we see when we take state government and state universities at large. (Monaghan)

From this standpoint, increasing the effectiveness of public service means taking steps to facilitate this kind of informal exchange, to reduce institutional barriers that inhibit them, and to improve the overall milieu.

> The wealth of day-to-day contact is built upon personalities, it deals with trust levels and is something that probably cannot be disturbed by administrations. Perhaps it can be disturbed by a more negative general milieu, but it is something that we should take some delight it. . . . We need to facilitate brokering functions, try to enlist the support of top managers in state government to make those contacts fertile, and build incentives into the university side. (Monaghan)

> There is in our state [Utah] an easy interaction between higher education and the state through ad hoc task forces appointed for limited terms and specific objectives without establishing permanent "coordinating committees." (Lattman)

Formal Linkages

While recognizing the importance of informal public service contacts, participants also made a strong argument that some degree of formal structure is needed to establish linkages between universities and government agencies or development organizations. This approach "allows each group to become familiar with the problems and capabilities of the other." (Bramlett)

> Higher education participation on advisory committees is useful for developing contacts with state agency people and building rapport, even though they are generally not close enough to the policy making process to be called upon for immediate response to policy research needs. (Monaghan)

One model proposed for setting up formal university-economic development linkages and dealing with some of the institutional barriers to providing effective public service was a quasi-independent, university-based public service unit. This approach was raised by a number of participants in different forms: "an independent state research and development foundation," "a regional Brookings Institution," and "a university consulting firm."

Several possible advantages of an independent unit were suggested:

- The setting of research priorities through a "policy board" representing regional or state leadership.

  > A separate entity is necessary to legitimize the process of developing ideas, selecting projects to fund, monitoring the quality of work done, and to legitimize faculty involvement in multidiscipline effort. (Lyell)

  > The California Policy Seminar is governed by an executive committee composed of the university president, the governor, the leadership of both houses of the legislature, and their appointees. It commissions research projects on long-term policy problems facing the state, reviews ongoing research efforts, and disseminates the results to the public. (Cummins)

  > Iowa has a project called the Legislative Environmental Advisory Group (LEAG). It is comprised of about eight legislators from both houses, four or five top administrators from the University of Iowa and Iowa State, and four or five state agency heads. This group meets three or four times a year. First of all, they identify policy issues in the environmental and natural resource areas that the state government is concerned about. Second, they decide which of these are the most important and they list five policy questions they want work done on. Then, the universities put out small requests for proposals from faculty to work on these five questions, and offer small grants. (Pendleton)

- Timely responsiveness to user needs, because such a unit would have a full-time professional staff without teaching responsibilities and would have a research management system geared to client requirements rather than traditional academic research.

The University of Arizona's Office of Arid Lands Studies has a staff of 120, only three of whom are tenured; most do not have teaching duties. Its ability to respond quickly has been a key factor in its strong relationship with private industry. (Foster)

The University of New Mexico's Institute for Applied Research Services has a large number of full-time professional staff who are critical to the institute's continuity and ability to deliver services to meet client needs. Faculty are involved on a project-by-project basis. (Zink)

- Credibility, if independence increases the ability to be objective and to be *perceived* by outside constituencies as such.
- Faculty incentives. Independence from the traditional academic reward systems enables the unit to evaluate and reward performance by public service objectives.
- Ability to deliver "low prestige" applied research services, which are not attractive to faculty oriented toward publishable, scholarly research.
- Ability to organize multidisciplinary research projects without having to negotiate around academic departmental lines.
- Ability to be flexible enough to take advantage of opportunities for resource sharing.

The Small Business Development Center at California State University, Chico, has made itself the focal point for providing a wide range of services to a large rural territory, which goes beyond any one "small business" program. It uses its EDA funding to provide technical assistance to local community economic development organizations; its Small Business Administration (SBA) funding allows it to assist very small businesses which have a low job impact. It represents the state rehabilitation agency in its region. It conducts labor market research as a subcontractor to UC, Davis. It uses SBA's Service Corps of Retired Executives program to provide screening of applicants for technical assistance as well as part-time business instruction. With the university's nursing school, it provides rural health services. Its staff members serve as advisors to legislative committees on small business and the state economy, and it serves as the regional contact for the state economic development agency to serve industrial clients. (Schmidt)

- Visibility, and, therefore, greater ability to demonstrate public service activity and accomplishment in the funding process.

There are tremendous volumes of transactions between the university and state government and local government that do not go through a central office. That creates some political problems because, when budget time comes, you cannot point to a score card and say we have done this and this, even though the activity is there. (Burgess)

An independent public service unit, however, also has some disadvantages as an organizational model:

- It is difficult to draw on the talents of traditionally motivated, top-quality, faculty. If this occurs, the unit loses its rationale for association with a university, and becomes, in effect, a private consulting firm.
- Continuity of funding, to provide a basic core of research and management capability, remains a problem.

Even at the University of Alaska's Institute for Social and Economic Research—which is much more favorably situated that many universities because of support from the state legislature and executive, a wealthy state government, and a high level of contract research on problems related to federal land and resource management—staff continuity and the tenure system in an organization supported 80 percent by soft money, remain central problems. (Gorsuch)

- Credibility depends on performance, not structure.
- Formal linkage structures may fall into disuse or even impede informal public service interchange.

> Effective linkage structures are expensive to maintain and often fall into disuse. If they prove effective, then renew them. But do not allow them to stand idle or interfere with established informal linkages based on personal relationships. (Bramlett)

Special institutional linkages are also needed to address regional issues and problems shared by several states. The Western Rural Development Center, based at Oregon State University, is an effort to share resources among the region's land grant universities on issues of rural development.

> The center was established by the U.S. Department of Agriculture to facilitate an exchange of ideas and materials by involving researchers and educators, primarily from Agricultural Experiment Stations and Cooperative Extension Services, in specific rural development projects which combine both research and education elements in two or more western states. The center serves as a broker of project ideas among regional faculty, and assists in assembling groups that share common interests to develop research and education programs. Priority issues include community impacts from growth or decline; land use and planning; economic problems of small towns; water issues; rural health systems; rural citizen participation; public service provision problems; employment and income diversification; and small farm problems. (Sorenson)

Conference participants recommended that a priority area for further development and discussion should be new institutional mechanisms to deal with the communication and coordination problem.

> Western states should seek to establish highly professional, objective development research teams charged with presenting the results of their research to decision makers and the public in an unbiased manner. It is essential that these teams establish a reputation for professionalism and for letting the chips fall where they may among all political factions. (Reaume)

> We need to explore new institutional arrangements, like some regional mechanism, to identify regional issues and to mobilize regional resources to deal with them. (Burgess)

> There is an absence of a clearinghouse between town and gown. There ought to be some such interface. It ought to be comprehensive and reliable and compilable, say, in the form of a catalogue. (McCall)

> Just as with the "Wisconsin idea" (extension services) of the early 1900s, people of the state came to regard the university as a good investment which returned economic benefits to the state, so today government, higher education, and business can mold a "WICHE idea." Perhaps such a partnership could provide the basis for a western economic development "experiment station." (Goltz)

Summary

In summarizing the conference, Philip M. Burgess, Executive Director of WESTPO and a WICHE Commissioner, reflected the consensus that the problems were well identified and that it was time to move on to finding and implementing solutions.

> What we need to do is to find ways—strategies—to move to the mitigation of problems, to overcoming obstacles, and to developing institutional mechanisms to help us improve the resources that are available to state and local governments and the private sector. If we could marshal the same talent and the same focus of attention and the time on problems between state government and the university that we have done on the national level, I think we could achieve many of the goals that have been talked about. We need

to take confidence in the knowledge we have about what some of the solutions are and begin to invent strategies and find institutional mechanisms to start dealing with those kinds of issues. (Burgess)

Gene Bramlett concurred in the call for innovative institutional systems.

I question whether a significant increase in the effective use of university resources in the region will actually occur over the next ten or fifteen years unless a truly innovative approach is developed to manage the effort. The resources exist and, with the proper incentives, they can be tapped. But the mechanisms to use them effectively are not in place. (Bramlett)

A first step could be a reaffirmation of the public service role of higher education, particularly as it applies to economic development.

I recommend that state governments formally recognize the significant role and potential of the higher education community by adopting a policy statement in support of the idea: 'A major function of the state's universities is to assist the economic development of the state through a variety of public service activities.' (Goltz)

Accompanying this type of positive statement, universities need to improve the public's understanding and perception of their role and public service capabilities.

Universities need better exposure, better PR—pardon the expression. They need to figure out a way to package better what they have to say, to gain greater recognition in legislative and executive levels of state government as to the benefits and capabilities within universities. (Monaghan)

Burgess urged the conferees to look closer to home for support and constituencies for higher education outreach.

We need to think about what I call a bootstraps and grassroots approach to university public service. We need to think more about what we could do ourselves with resources at our command to help achieve the kinds of economic development or human service delivery we want to pursue. Federal resources are drying up, foundation resources are in short supply.

By the grassroots approach, I mean that we need to get the leadership in our communities, in our states, involved in the process of making the universities and other institutions more relevant to the needs we have in our local communities and in our states. We do not do that very well right now. State-assisted universities, particularly, should be finding ways to work more creatively with local leadership, and that is not just the governors and the mayors and program directors, but civic leaders, the leadership in the communities. (Burgess)

One important step in developing solutions and new institutional arrangements, Burgess said, is to identify efforts that have been tried in other states, analyze the elements that made those efforts successful, and share this information.

We need to understand better the institutional arrangements that work and that do not work and the conditions under which that happens. . . . We need a continuing appraisal of where we are within the region, within each state. (Burgess)

Progress toward improving the use of higher education to support economic development in the West must be an ongoing process, Burgess concluded, and regional cooperation is critical to making that happen.